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DISTRICT COURT, WATER DIVISION NO. 5 STATE OF COLORADO 109 8th Street, Suite 104 Glenwood Springs, CO 81601 (970) 945-8109	COURT USE ONLY
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: SHELL FRONTIER OIL & GAS INC. in Garfield and Mesa Counties	Case Number: 08 CW 007 Div.: Ctrm.:
Mark A. Hermundstad, #10527 Kirsten M. Kurath, #24649 WILLIAMS, TURNER & HOLMES, P.C 200 North 6 th Street, P.O. Box 338 Grand Junction, CO 81502 Phone Number: (970) 242-6262 Fax Number: (970) 241-3026 E-mail: mherm@wth-law.com; kmkurath@wth-law.com	
AFFIDAVIT OF RICHARD S. MYKITTA	

The undersigned, being first duly sworn upon his oath, deposes and states as follows:

1. My name is Richard S. Mykitta. I am employed by Shell Production & Exploration Company as the Operations Manager for the Mahogany Research Project. I have held that position since October 1, 2005. Shell Production & Exploration Company is a sister company to Shell Frontier Oil & Gas Inc., and both companies are subsidiaries of Shell Oil Company.

2. My role as Operations Manager is to oversee and support the execution of the various research projects and/or efforts associated with the continued development of technology to produce oil and gas from oil shale deposits located in the Piceance Basin. In addition, I am associated with and often lead the permitting effort associated with Federal, State and County agencies in connection Shell's oil shale activities.

3. There is a report attached to this Affidavit as Exhibit A. I helped to prepare that report. I have reviewed the report attached to this Affidavit as Exhibit A and state that it is correct and accurate to the best of my knowledge, information and belief. I have personal knowledge of the facts set forth in Exhibit A and/or have obtained knowledge of those facts through my employment with Shell Production & Exploration Company. The opinions expressed in Exhibit A are based on my education, training and experience.

4. My resume is attached to this Affidavit as Exhibit B.

Dated: July 20, 2009


Richard S. Mykitta

STATE OF COLORADO)
COUNTY OF Mesa)

Subscribed under oath before me on July 20, 2009.

My Commission expires: 8/29/2012


Notary Public



EXHIBIT A TO AFFIDAVIT OF RICHARD MYKITTA

Shell Frontier Oil & Gas Inc. is the Applicant in Case No. 08CW007, which is a diligence application relating to water rights commonly referred to as the “Pacific Rights.” This report has been prepared to address some of the issues raised by the Division Engineer’s Summary of Consultation Report in Case No. 08CW007. As used in this report, the term “Shell” refers to and includes Applicant Shell Frontier Oil & Gas Inc. and its affiliated, parent, and subsidiary companies.

Shell owns interests in real property in Western Colorado that it plans to develop for the production of oil and gas from oil shale and ancillary uses. Shell also owns conditional and absolute water rights that it plans to use to develop its oil shale properties. Shell is a recognized industry leader in the development of an *in situ* process to recover oil and gas from oil shale. Shell’s property interests, water rights and *in situ* process will be described in the following sections of this report.

1. Shell’s Property.

Shell has acquired substantial interests in real property in Western Colorado that it plans to develop for the production of oil and gas from oil shale. These properties are located in both the Colorado and White River drainages. These properties are shown on Attachments 1A and 1B, and shall be referred to in this report as “Shell’s Property.” Shell’s Property is generally described as follows:

A. Mahogany Property: This property consists of approximately 19,584 acres, located in the Yellow Creek basin. Yellow Creek is a tributary of the White River. The location of the Mahogany Property is shown on Attachment 1B.

B. Pacific Property. This property consists of approximately 13,347 acres, located in the Roan Creek basin. Roan Creek is a tributary of the Colorado River. The location of the Pacific Property is shown on Attachment 1A.

C. Red Pinnacle Property. This property consists of approximately 4,924 acres and is also located in the Roan Creek basin. The location of the Red Pinnacle Property is shown on Attachment 1A.

D. Research, Development and Demonstration (“RD&D”) Leases and Preference Lease Areas. Shell has entered into three RD&D Leases with the U.S. Department of the Interior, Bureau of Land Management (“BLM”). These Leases are located primarily in the Yellow Creek drainage, adjacent to Shell’s Mahogany Property. They are located in some of the thickest and richest oil shale formations in the Piceance Basin. Each of these Leases allows Shell to conduct oil shale research activities on approximately 160 acres of federal land managed by the BLM. If Shell’s research activities are successful, Shell can earn a preferential right to convert each RD&D Lease to a 5,120 acre commercial lease. The Preference Lease Areas (including the RD&D Leases) are shown on Attachment 1B.

E. Other Properties. In recent years, Shell has also acquired other properties in the Yellow Creek drainage from third parties that it intends to utilize in its oil shale operations. The locations of these properties are shown on Attachment 1B.

Attached to this report as Attachment 2 is a paper entitled “Oil Shale ICP – Colorado Field Pilots.” This paper was prepared by employees of Shell Exploration and Production Company, a sister company to Applicant Shell Frontier Oil & Gas Inc. The paper was presented at a conference of the Society of Petroleum Engineers in March, 2009, and shall be referred to in this report as the “Shell ICP Paper.”

As discussed in the Shell ICP Paper, the Green River Formation is the largest oil shale deposit in the world. It consists of the Green River Basin in Wyoming, the Uinta Basin in Utah, and the Piceance Basin in Colorado. All of Shell’s Property is located in the Piceance Basin. The Piceance Basin “accounts for two-thirds of the oil shale resource within the Green River Formation,” with a “resource density of up to 2.5 million barrels per acre.” Shell ICP Paper, p. 2.

The Piceance Basin is located generally between the White and Colorado Rivers in Western Colorado. See map on p.1 of the Shell ICP Paper. With respect to Shell’s Property, the richest oil shale deposits are located on the properties located in the Yellow Creek drainage (Yellow Creek is a tributary of the White River). Accordingly, during this diligence period Shell has focused its oil shale research and development activities on the portions of Shell’s Property in the Yellow Creek drainage.

Over the years Shell also acquired real property located in the Piceance Creek drainage basin. However, during this diligence period Shell determined that it did not need these properties for its oil shale operations. Accordingly, it exchanged these properties for other properties that were needed for its oil shale operations during this diligence period.

2. Shell’s Water Rights.

Shell also owns water rights that it intends to use in connection with the oil shale development on Shell’s Property. Historically, Shell’s primary water rights for oil shale development have consisted of the following:

A. YZ Rights. The YZ rights consist of nine water rights located in the White River drainage. These rights are adjudicated to the following structures: Stillwater Reservoir; Stillwater Power Plant; First Enlargement of Stillwater Reservoir; South Fork - Piceance Pipe Line; Fourteen Mile Reservoir; First Enlargement of Fourteen Mile Reservoir; White River - Fourteen Mile Creek Pipe Line; South Fork Reservoir; and South Fork Pipe Line. Shell entered into an option to purchase the YZ rights in 1995. Shell exercised the option and purchased the YZ Rights in 2006 for a total of \$14 million.

B. Pacific Rights. The Pacific Rights are the water rights that are the subject of the current diligence application in Case No. 08CW007. They consist of five water rights located in the Colorado River drainage. These rights are adjudicated to the following structures:

Pacific Oil Company Pipeline and Pumping Plant No. 2; Clear Creek Feeder Pipeline; Conn Creek Feeder Pipeline; Deer Park Gulch Pumping Pipeline; and Deer Park Gulch Reservoir.

C. Other Rights. The YZ Rights and the Pacific rights have historically been the primary rights that Shell has planned to use in the development of Shell's Property. However, prior to this diligence period Shell acquired additional water rights that it also intended to use in the development of Shell's Property. These other water rights are described on Exhibit A to the Application filed in Case No. 08CW007. They generally include several springs known as the SWEPI Springs, the Pacific Springs, and the Shell Springs; a number of senior agricultural rights diverting from various places in the Roan Creek drainage and the Colorado River; and several senior agricultural rights diverting from the White River.

D. Shell's Water Supply System. The YZ Rights, the Pacific Rights, and the Other Rights described above comprise a single, unified water system that will provide water for the development of Shell's Property. These water rights have been held in numerous prior diligence proceedings to be components of a single unified water system, known as "Shell's Water Supply System." See the decrees entered in the following cases: Case No. 01CW138; Case No. 02CW36; Case No. 02CW296; and Case No. 04CW41. Copies of these decrees are attached to this report as Attachment 3.

The decrees in the cases noted in the preceding paragraph also indicated that other water rights were included as components of Shell's Water Supply System. See the decrees attached as Attachment 3. As noted in Section 1 of this report, dealing with Shell's Property, Shell determined that it did not need certain property owned by it in the Piceance Creek drainage basin for its oil shale operations, and so it exchanged those properties for other properties. It also disposed of the water rights associated with those properties. Thus, although those Piceance Creek water rights were originally determined to be components of Shell's Water Supply System, they ceased to be a part of the System upon their conveyance to third parties.

During this diligence period Shell has also appropriated or purchased numerous other water rights that it intends to use in the development of the oil shale resources on Shell's Property. These water rights were listed on Exhibit B to the Application filed in Case No. 08CW007. These additional water rights have not previously been determined to be components of Shell's Water Supply System. Shell claimed in Case No. 08CW007 that they are components of Shell's Water Supply System. For purposes of Case No. 08CW007, Shell is withdrawing its claim that the water rights listed on Exhibit B to the Application filed in Case No. 08CW007 are components of Shell's Water Supply System. However, Shell continues to believe that these water rights are components of Shell's Water Supply System, and this withdrawal is made without prejudice to make this claim in other proceedings.

3. Shell's Oil Shale Research and Development Activities.

As described in the Application filed in Case No. 08CW007, Shell is exploring methods to increase domestic oil supply in the U.S. in a way that is economically viable, environmentally responsible and socially sustainable. One method that Shell is intensively exploring is the production of fuels from oil shale resources. Shell has developed a patented In-Situ Conversion Process ("ICP") to recover oil and gas from oil shale.

Under the ICP, a freeze wall is first installed in the area from which the oil and gas will be recovered. A series of holes are drilled outside the intended resource target and a chilled fluid is circulated inside a closed loop piping system. The cold fluid freezes the nearby rock and groundwater and creates a wall of ice known as a “freeze wall.” This freeze wall is maintained during both the production and reclamation phases of the project. After the freeze wall is established, producer holes are drilled and used to remove some of the groundwater inside the freeze wall. Heater holes are then drilled and electric heaters are installed to heat the target oil shale formation for a period of several years. Oil and gas will then come to the surface via the previously installed producer holes. This oil and gas will then be collected for further processing using traditional processing techniques. Shell has been granted over 70 U.S. patents covering many aspects of the ICP, and an additional 150 U.S. patent applications have been filed. The ICP has the potential to significantly reduce the environmental impacts of the recovery of oil and gas from oil shale. In addition, the oil developed by the ICP is higher quality than that derived from conventional surface retorting techniques. More details regarding the ICP are provided in the Shell ICP Paper (Attachment 2) and in brochures attached hereto as Attachment 4.

The Shell ICP Paper describes in detail the activities in which Shell has engaged to test and refine the ICP. Many of these activities were conducted, at least in part, during the current diligence period for the Pacific Rights (which began in January, 2002). Some were conducted at an earlier time. The major field activities that Shell has conducted regarding the ICP include:

A. The Red Pinnacle Thermal Conduction Test in 1981-1982, described on p. 5 of the Shell ICP Paper. This test was conducted on Shell’s Red Pinnacle Property in Garfield County.

B. The Mahogany Field Experiment in 1996 – 1998, described on pp. 5 - 6 of the Shell ICP Paper. This experiment was conducted on Shell’s Mahogany Property in Rio Blanco County.

C. The Mahogany Demonstration Project (Original) in 1998 – 2005, described on pp. 6 - 7 of the Shell ICP Paper. This project was conducted on Shell’s Mahogany Property in Rio Blanco County.

D. The Mahogany Demonstration Project (South) in 2003 – 2005, described on pp. 7 - 8 of the Shell ICP Paper. This project was conducted on Shell’s Mahogany Property in Rio Blanco County. This test produced 1,860 barrels of oil and demonstrated that the ICP works technically on a small scale.

E. The Deep Heater Test, begun in 2001 and continuing to the present, described on pp. 8 – 9 of the Shell ICP Paper. This test is being conducted on Shell’s Mahogany Property in Rio Blanco County.

F. The Mahogany Isolation Test in 2002 – 2004, described on pp. 9 - 10 of the Shell ICP Paper. This test was conducted on Shell’s Mahogany Property in Rio Blanco County.

G. The Freeze Wall Test, begun in 2005 and continuing to the present, described on pp. 10 - 11 of the Shell ICP Paper. This test is being conducted on Shell's Property near two of Shell's RD&D Leases.

In summary, Shell has conducted seven pilot projects with respect to its oil shale resources, each with increasing scope, cost and complexity. The projects have focused on demonstrating the feasibility of the ICP technology, determining recovery efficiency, testing of heaters, and creation of freeze walls. Shell is now planning the field tests that will be conducted on the RD&D Leases. As noted in the Shell ICP Paper, Shell plans to test several different technologies on the RD&D Leases: (1) the base ICP; (2) an advanced heater ICP; and (3) nahcolitic oil shale ICP. See Shell ICP Paper, p. 11.

4. "Can and Will" and Anti-Speculation Issues.

a. Introduction.

There are always uncertainties associated with new technologies, new basin developments and the economics associated with commodities. The volatility of oil prices experienced in recent times is a concern and due to the nature of the oil shale deposits, oil price is a risk to any oil shale project. However, Shell believes that oil shale will play a role in the world's crude supply in the long term and is part of the solution to U.S. energy independence. Shell further believes that even with these challenges, Shell will progress its effort to develop the technology to successfully produce its oil shale resources in the U.S. and in other holdings around the world.

In the world today, there are few easy development plays, as demonstrated by an industry that seeks deposits in thousands of feet of water and in harsh climates like northern Alaska, in mining of tar sands in Canada and in the deployment and application of water and carbon dioxide drives to advance recovery when primary, natural drives are depleted. Like these basins that overcame challenges and much like the tar sands in Canada, oil shale represents a new opportunity and a different set of challenges. Shell believes that the industry will learn by doing and bring continued improvements in cost through technology enhancements that will reduce the economic risk and exposure to price fluctuations.

The development of the tar sands in Alberta, Canada, provides a useful analogy to oil shale development. Research into extracting oil from the Alberta tar sands began in the early part of the 20th Century with varying degrees of success. History records that in 1926 Dr. Karl Clark of the University of Alberta perfected a hot water separation process which became the basis of the thermal extraction technology used today.

Oil was first produced from the Alberta tar sands on a commercial scale over 35 years ago. Production was limited at first, but it has grown to over one million barrels per day at the current time. Over time, oil sands technology has matured and improved, capital and operating costs have dropped, water use requirements have dropped, and energy efficiency has improved. Similar advancements can be expected as the oil shale industry develops and improves the technology for extracting oil from oil shale.

Recent federal legislation has also recognized the importance of developing unconventional fuels resources such as oil shale. The federal Energy Policy Act of 2005 established a task force to develop a program to coordinate and accelerate the development of unconventional fuels. That task force prepared a report, published in September, 2007, making recommendations regarding the development of unconventional fuel resources. That report concluded that the domestic and global fuels supply situation and outlook is urgent, and that an aggressive program to develop unconventional fuels is warranted. See the Executive Summary from the report entitled “America’s Strategic Unconventional Fuels”, prepared by the Task Force on Strategic Unconventional Fuels and published September, 2007, attached hereto as Attachment 5. The Energy Policy Act also allowed the leasing of federal oil shale properties for research, development and demonstration activities. See Shell ICP Paper, p. 11. As discussed above, Shell has obtained three RD&D Leases under this leasing program.

b. Technical feasibility.

The Mahogany Demonstration Project (South), discussed in Section 3 of this report, produced 1,860 barrels of oil from oil shale. It demonstrated that the ICP works technically on a small scale. Thus, the ICP technology has been proven to be a technically feasible method for extracting oil from oil shale. Shell is now working to prove that the ICP can work on a commercial scale.

It is my opinion that Shell’s ICP is a feasible method to unlock the potential energy opportunities that exist on Shell’s Property. Over the past twenty plus years Shell has researched and progressed the development of this technology with success. It continues to refine the technology on an ever increasing scale moving toward a full commercial development. I believe that the ICP will be able to produce oil and related products from oil shale on a commercial scale.

In addition, the ICP offers advantages over the classical retorting methods used in the past. For example, 1) there is no open pit or cavern mining and therefore, both the nature and quantity of solid waste material is less, 2) fewer processing steps are required to produce high quality transportation fuels, as the slower heating adjusts the kinetics such that there is a swing to a greater concentration of higher value crude oil components, and 3) it offers access to deeper resources that generates more oil and gas from a smaller surface pad area.

c. Financial feasibility.

The Shell ICP Paper contains the following quote from a 1918 publication:

The oil shale industry is not, in ordinary parlance, a poor man’s game. The technical and chemical problems are numerous and require a high grade of scientific ability for their solution.

Shell ICP Paper, p. 2. The work that Shell has done on its oil shale properties to test and improve the ICP bears out the accuracy of this quote. Shell has spent many tens of millions of dollars on the activities described above, and plans to spend additional large sums of money to

prove the ability of the ICP to produce oil and related products from oil shale on a commercial scale. Shell is one of the largest energy companies in the world and possesses the financial resources necessary to complete the development of the technology to produce oil from its oil shale properties.

d. Time period and plan for development of oil shale resources.

Similar to the development of the oil resources at the tar sands sites in Alberta, the development of oil shale resources in the Piceance basin will not be a short-term development. As discussed above, Shell is working diligently to perfect its ICP and prove that it can produce oil from oil shale on a commercial basis. Shell must demonstrate the technology in order to proceed with the development of its fee lands and in order to acquire commercial leases from the federal government for the preference areas under the RD&D Leases. In addition, Shell must demonstrate adequate protection of the environment while developing its oil shale resources.

Shell's current plan is to continue to advance the ICP technology to prove that it can produce oil from oil shale on a commercial basis. Once this is proven, Shell will then need to obtain the governmental permits necessary for its oil shale project. Shell anticipates that it will need permits from the federal government (in addition to permits from state and local agencies). It further anticipates that the NEPA compliance process will require preparation of an environmental impact statement with respect to Shell's oil shale project. Shell's current projections are that it will take up to twenty years to accomplish the tasks described above and to begin commercial production of oil from oil shale.

Substantial quantities of water will be required for oil shale development. Water is needed for many different uses in the process, including basin processing activities, reclamation, power production and liquid/gas processing. Shell plans to use water developed from the rights in Shell's Water Supply System to provide the water for development of the oil shale resources on Shell's Property. Shell is currently working to determine its water needs for the ICP. As the ICP is perfected and the water needs are refined and determined, Shell will design the facilities necessary to develop the water rights in Shell's Water Supply System that will be used to provide water for oil shale development. Water will be needed for all stages of commercial development of the oil shale resources, so Shell anticipates that the water rights needed for the development will be developed at or prior to the time commercial production occurs (i.e., within the next twenty years).

I believe that the time period set forth above for commencement of commercial production of oil shale and for the development of the necessary water rights from Shell's Water Supply System is reasonable. As noted above, the development of unconventional energy resources such as oil shale is becoming more necessary as the easier energy plays are exhausted. The time period noted above compares favorably to the development of other unconventional energy resources such as the Alberta tar sands discussed above and deep sea oil drilling activities in the Gulf of Mexico.

My duties for Shell include permitting activities for Shell's oil shale project. I believe that Shell will be able to obtain the necessary permits for its oil shale project. Those permits will

include the permits necessary to develop the necessary water rights in Shell's Water Supply System. The points of diversion of some of the Pacific Rights are located on properties owned by third parties. Shell anticipates being able to negotiate agreements with the owners of those properties to allow its facilities to be located on those properties. However, if such agreements cannot be negotiated, Colorado law provides for the exercise of eminent domain rights to acquire the necessary rights for its facilities. Shell will need various permits from the federal government to proceed with its oil shale project. As noted above, that will require NEPA compliance and the preparation of an environmental impact statement. Impacts from the development of the water rights in Shell's Water Supply System will probably be examined as part of the NEPA process. However, I believe that Shell will be able to satisfy any concerns that are raised during the NEPA process and that it will be able to obtain the necessary federal, state and local permits to allow it to proceed with the development of its oil shale project and of the necessary water rights in Shell's Water Supply System. My opinions are based on my experience and knowledge of Shell's operations, my experience in permitting activities, and on the recognition by federal statutes and policies (such as the Energy Policy Act of 2005) of the importance of the development of unconventional fuels such as oil shale,

5. Conclusion.

As described in Section 1 of this report, Shell owns and leases extensive lands in Western Colorado that contain oil shale resources. These lands are located in two different river basins: the Colorado River basin and the White River basin. However, all of these oil shale lands are located in the Piceance Basin of the Green River Formation, and Shell considers all of these lands to be integral parts of its activities to develop a commercial oil shale project. This is demonstrated by the fact that Shell's activities have been and will be conducted on or with respect to various portions of its lands in both the Colorado River basin and in the White River basin, including the Red Pinnacle Property (see Shell ICP Paper, p. 5), the Pacific Property (see Shell ICP Paper, p. 5), the Mahogany Property (see Shell ICP Paper, pp. 5 - 10), and the RD&D Leases (see Shell ICP Paper, p. 11).

Water will be needed to develop the oil shale resources on Shell's Property. As described in Section 2 of this report, Shell has acquired substantial water rights to provide this water. Those water rights include the YZ Rights, located in the White River basin, and the Pacific Rights (which are the subject of the diligence application), located in the Colorado River basin. The YZ Rights and the Pacific Rights have been held, in prior diligence proceedings, to be components of an integrated system to provide water to Shell's Property, including the Mahogany, Pacific and Red Pinnacle Properties.

My opinions, based on my knowledge and experience with Shell and on the matters discussed above, are as follows: Shell's ICP will provide the technology to produce oil from Shell's oil shale resources on a commercial scale; Shell will develop the necessary water rights from Shell's Water Supply System to provide the water for commercial oil shale development; and Shell's oil shale project and the water rights necessary to support that project can and will be developed within a reasonable time frame, consistent with the time frames that were needed to develop other unconventional fuel resources such as the Alberta tar sands.

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Richard S. Mykitta

Education:

University of Tennessee BS – Chemical Engineering

Professional experience:

2005 - present Shell Exploration & Production Co Meeker, CO

Operations Manager

- Research & Development efforts for oil shale production.
- Execute operations phase of novel large-scale projects
- Implementation of structured processes around operations and maintenance
- Focus to local communities and local government officials

2004 - 2005 Shell Oil Products US Los Angeles, CA

Engineering Manager

- Management of turnarounds, construction, project engineering, electrical and mechanical engineering, oversight of central shops and warehouse.
- Accountable for refining support and interface
- Implementation & ownership of standardized work processes and management systems.
- On-site leadership of maintenance organization

2002 - 2004 Shell Chemical, LP Mobile, AL

Plant Superintendent

- Provide vision, leadership, direction & management of day-to-day activities of all functions of Mobile site, specific focus on Operations & Maintenance.
- Responsible for ensuring plant performance aligned with and meet overall Operational Excellence Key Business Activities, including safety, environmental, production, reliability, productivity and people goals and objectives

1998 - 2002 Shell Chemical, LP Mobile, AL

Production Manager

- Champion execution of site action plans and compliance with all applicable and regulations.
- Develop, coach, manage and supervise Operations and Maintenance employees.
- Develop, plan and execute Turnaround Strategy
- Develop, maintain and execute site business strategy in line with PBU strategies.

1982 - 1998 Various Shell E&P Companies Various locations

Various

- Project/Process Engineer - Sour Natural Gas Production & Processing
- Managing multiple production & plant properties in US
- Oversee purchase/sale of properties, negotiations of 3rd party gas processing services, sale of natural gas/sulfur/NGL.

Licenses:

- Professional Engineer License – Alabama